

Implications Of *Cannabis Sativa* On Serotonin Receptors 1B (HTR1B) And 7 (HTR7) Genes In Modulation Of Aggression And Depression

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Abstract

The use of *Cannabis sativa* L. is rampant in the young generation and it induces diverse psychological disturbances, hence the correlation between cannabinoids and expression of serotonin receptors in modulation of depression tendencies. Alterations in the expression of serotonin receptors 1B (*HTR1B*) and 7 (*HTR7*) genes in the brain of Wistar rats after oral administration of graded doses of *C. sativa* extract was investigated for different durations of daily administration to establish a correlation between dose, duration of exposure and modulation of aggression/depression. *C. sativa* was extracted using petroleum ether as the solvent and constituents analyzed through gas chromatography. We orally administered doses of cannabis extract (12.5, 25, and 50 mg/kg) daily for 4, 8, and 12 weeks to male Wistar rats divided into 12 groups of six animals. Reverse transcriptase polymerase chain reaction (RT-PCR) technique was used to quantify the expressions of genes. Expression of *HTR1B* was upregulated after 4 and 8-weeks' exposure to 50 mg/kg dose with relative expressions of 0.68 and 0.91 as compared to 0.48 and 0.52 of the control group, resulting in 41.7% and 75% upregulation. However, results got at 12 weeks revealed a downregulation in the lower doses group by 76% and 71% while the 50 mg/kg dose produced a downregulation of the gene. This suggests a reversal of effect because of prolonged exposure. The extract successfully upregulated *HTR7* only after 12 weeks of exposure to 25 and 50 mg/kg doses by 22% and over 100% respectively. *Cannabis sativa* alters the expression of *HTR1B* and *HTR7* and accounts for the mechanism through which users exhibit depression/aggression attributes, as well as modulation of cognitive ability.